bouillet, and Châteauneuf-sur-Loire, making an angle of from 25° to 30° with the geographical meridian. The maps of the other elements also show effects along this line, viz. an increase in the dip, and a decrease in the horizontal force.

On comparing this anomaly with a geological map, we find that it extends exclusively over calcareous and cretaceous soils. In the region under consideration, the isogonals also present a regular deformation, which is not found over rocks of a kind to produce local effects on the compass. In the latter case the results are discordant, and it is seldom possible to represent them by curves. The totally unexpected phenomenon brought to light by this first series of observations seems due to some more general cause, the nature of which has yet to be determined. Before attempting an explanation, it will, no doubt, be necessary to study it more completely, and to extend the network of stations southwards. The irregularities in the isomagnetic lines which Messrs. Rücker and Thorpe have discovered in the south of England seem to be connected with those which M. Moureaux has observed in France.

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### On a Possible Connection between the Ridge Lines of Magnetic Disturbance in England and France. By A. W. Rücker.

The possible connection between the French and English surveys, referred to by M. Mascart, can only be appreciated in view of facts which have been brought to light in the magnetic survey of the United Kingdom. It may therefore be desirable that a few lines should be added as to the phenomena observed on this side of the Channel.

The most salient feature in the magnetic constitution of the south of England is the existence of a ridge line (*i.e.* a line towards which the north end of the needle is attracted) the direction of which coincides generally with that of the Palæozoic axis. It runs through South Wales, passes thence to the valley of the Thames, and deviates to the south through Kent.

Near Reading the disturbance reaches a local maximum, and from this point a spur is thrown off, which passes due south to the Channel. In the maps which illustrate the magnetic survey of Dr. Thorpe and myself, it is shown entering the sea near to, but a little to the west of, Selsey Bill.

If the direction of the ridge line described by M. Mascart as passing through Rambouillet, Elbeuf, and Fécamp, be prolonged, it cuts the English coast near Portsmouth.

Putting aside, therefore, all other considerations, we may at the very least conclude that as the directions of the English and French ridge lines intersect in the Channel, they may possibly be connected. There are, however, various arguments which increase the probability of the connection.

We have traced in the United Kingdom two main ridge lines which run through districts covered by sedimentary rocks, and where, therefore, the source of attraction, if due to rocks, must be deep seated. In both cases the general directions of the lines remain unchanged for long distances.

A line, about 150 miles long, drawn from St. Bride's Bay to Kew would fairly represent the direction of the main magnetic ridge in the south.

Two lines, each 75 miles long, drawn from Wainfleet to Market Weighton, and from Market Weighton to Ribblehead, would fairly represent the main features of the ridge line which runs from the Wash to South-east Yorkshire, and thence to Craven. They display, in fact, the same kind of continuity of direction as is shown by many mountain ranges. From Châteauneuf to Fécamp the ridge line follows an easy curve for 150 miles. The three most northerly stations lie nearly on a straight line 100 miles long, and it is quite in accord with what has been observed elsewhere that this general direction should be preserved for another 80 miles across the Channel. There are very similar magnetic indications that the Palæozoic axis extends across the Irish Channel, where it is 60 miles wide.

If this be so the direction of the French ridge alters when it approaches the English coast.

This might be expected. M. Moureaux finds that the magnetic disturbance diminishes as the latitude increases, and the disturbances in South Sussex and Hampshire are at all events not greater than those he finds in the north of France.

The declination disturbances at Neufchâtel-en-Bray and near the mouth of the Seine are + 14′ and − 6′ respectively; at Worthing and Ryde they are + 8′ and − 10′. When the line of the North Downs is passed, the phenomena are complicated by the meeting of the two lines of disturbance which run east and west and north and south respectively. That a locus of centres of attraction of diminishing intensity should be diverted by approach to another well-marked ridge line is *a priori* probable.

If, however, we take a further step, and attempt to seek a physical cause for the facts, it is noticeable that the English and French lines of disturbance meet a little to the east of the Isle of Wight, and almost in the prolongation of the great fault which traverses that island.

On the whole, there appears to be good reason to believe that the ridge line which is thrown off from the Palæozoic axis at Reading crosses the Channel, and is continued for 150 miles and for an unknown distance beyond into the heart of France. The magnitude of the declination disturbance at Cosne (the most southerly point to which it has been followed) is 36′. This is greater than any disturbance hitherto observed in England, and is surpassed only by those obtained in Scotland and Ireland relatively near to basaltic rocks. The largest similar disturbances in England were found at Melton Mowbray and Loughborough, on good ground, but not far from the igneous rocks of Charnwood Forest. M. Moureaux's future investigations will, therefore, be followed with interest on this side of the Channel. Valuable evidence may be gained as to the causes of these disturbances when the clue he is following southwards has been followed to the end.

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## *NOTES.*

At the next evening meeting of the Zoological Society, on Tuesday, May 5, a special conference on the fauna of British Central Africa will be held, in order to encourage the new Commissioner, Mr. H. H. Johnston, C.B., and his associates in their exploration of that country. The subject will be introduced by the Secretary, but many other members are expected to take part in the discussion. Mr. Johnston has already left for Nyassaland, but his naturalist, Mr. Alexander Whyte, and his Chief of the staff, Mr. B. L. Sclater, R.E., are expected to be present at the meeting.

An important addition has been made to the Zoological Society's living collection in the shape of a fine adult specimen of the Lesser Orang (*Simia morio*) which has been received as a present from Commander Ernest Rason, R.N. The Lesser Orang was discriminated from the larger and more common form by Sir R. Owen as long ago as 1836, but this is the first example of it that has been acquired alive. It inhabits the swamps at the mouth of the Sarawak River in Borneo, where it is known to the natives as "*Mias Kassar*." An interesting account of its habits was sent home by the late Sir James Brooke in 1836, and was published in the Zoological Society's Proceedings for that year. The Lesser Orang is distinguishable from the larger Orang by its smaller size and by the absence of callosities on the face. The present specimen has been lodged in the Ant-eater's House, next door to the compartment occupied by "Sally," the bald-headed Chimpanzee, which has now lived seven years and six months in the Society's Gardens.

THE annual meeting of the Royal Society of Canada opens at Montreal on Wednesday, May 27, the sessions being held in the buildings of the McGill University. There will be the usual local excursions, receptions, and entertainments, in addition to the more serious work of the week. The Allan Line issues return tickets at £20 to £30, the Dominion Line at £16 to £30, and the Beaver Line at £16 to £18. The Committee are engaged in the preparation of a hand-book for gratuitous circulation among intending visitors, which will include an historical account of the Society, together with other interesting scientific and local information.

THE hand of Fate has been heavy of late upon the secretariat of the Reale Istituto Veneto. The Secretary has been seriously ill, the Vice-Secretary absent from heavy domestic calamity, and now Signor G. Berchet, who has been nominated by the President to undertake the secretarial work *pro tempore*, communicates to the Correspondents of the Istitute the death of Prof. Giovanni Bizio, an eminent member, who was formerly Secretary, and held that office for seventeen years.

THIS evening, a *conversazione* will be given by the Royal Microscopical Society.

THE Council of the City and Guilds of London Institute has issued its Report for the year 1890 to the Governors. It is to the electrical department that the greatest number of students have been attracted both at the Central Institution and at the Technical College, Finsbury. At both Colleges this department is overcrowded, and the Council is able to state that all those who completed their course at the end of last session have obtained employment. Unfortunately, the success of the electrical department has been to some extent achieved at the expense of the chemical department. "The great impetus which has been given of late years to the use or application of electricity," says the Council, "has made this branch of industry particularly attractive to young men in choosing their profession. There is, however, as great a want and as great scope for well-trained technical chemists, and the Council trusts that this important department may receive a larger share of new students in the future."

MR. G. J. ROMANES, F.R.S., is one of three gentlemen who were elected last week by the Committee of the Athenæum Club, in accordance with the rule which empowers the annual election by the Committee of nine persons of distinguished eminence in science, literature, or the arts, or for public services.

A REPORT from New York says that Lieutenant Robert Peary, of the United States Navy, who has obtained 18 months' leave, is making preparations for an Arctic expedition to start about the end of May. It is being sent by the Academy of Natural Sciences, and the duty of making observations will be confided to six persons. The explorers will start from St. John's Land, on Whale Sound, and scale the glaciers near the coast, up to a high altitude where the hard snowy plains will enable them to observe the shore formation until the spring, when they will start for the North Pole.

THE Geologists' Association has made arrangements for three geological excursions—which, if the weather is favourable, ought to be very pleasant—in the month of May. The first is an excursion to Guildford, and will take place on May 2. The next will last from May 16 to 19, when the members will have an opportunity of exploring the neighbourhood of Northampton. On May 30 there will be an excursion to West Surrey.

A COURSE of six lectures on photography is to be delivered at the Central Institution, Exhibition Road, by Mr. H. Chapman Jones. The lectures will be given on Wednesday evenings at 7.30, and will be begun on May 6. The subject will be treated both from a practical and from a scientific point of view.

A COURSE of six lectures (in connection with the London Society for the Extension of University Teaching) will be delivered in the lecture-room in the Gardens of the Zoological Society, Regent's Park, on Thursdays, at 5 p.m., beginning Thursday, May 23, by Mr. F. E. Beddard, Prosector to the Society and Davis Lecturer. The subject will be "The Animals living in the Zoological Society's Gardens." The lectures will be illustrated by diagrams, as well as by specimens.

ACCORDING to *Modern Light and Heat*, of Boston, something like an exodus of electricians from the United States to Europe is now going on. Many representatives of the leading American electrical companies are here already, and "many more are to follow." "It takes Americans," says our contemporary, "to stir up business of an electrical character in Europe, as is evidenced by the big shipments now being made from this side."

IN the current number of *Cosmos* there is a good reproduction of the interesting old portrait of Columbus, recently found at Como.

THE Rugby School Natural History Society has issued its report for 1890. The number of members and associates is now larger than it ever was, and the work during the year seems to have been generally most satisfactory. The editors complain, however, that there has been a lack of interest in geology. "In the early years of the Society," they say, "this section was the most popular of all; but later it led a lingering existence, and for some years has been practically extinct. We have a valuable geological collection, accumulated in the neighbourhood; and with the increased numbers on our lists we feel justified in calling on volunteers to continue this work of our predecessors."

THE new Quarterly Statement of the Palestine Exploration Fund contains an interesting paper, by the Rev. George E. Post, on land tenure and agriculture in Syria and Palestine, and on the physical, mental, and moral characteristics of the people. In the same number, besides various other contributions, there is a valuable comparison, by Mr. James Glaisher, F.R.S., of the highest and lowest temperatures of the air, and range of temperature, in Palestine and in England in the ten years ending 1889.

MM. GAUTHIER-VILLARS ET FILS have just issued "Les Théories Modernes de l'Électricité," a translation, by M. E. Meylan, of Prof. Oliver Lodge's well-known "Modern Views on Electricity." The same publishers, with M. Léon de Thier, Liége, issue a second edition of "Leçons sur l'Électricité," by M. Eric Gerard, the first edition of which was reviewed in NATURE. A second edition of M. J. Joubert's "Traité Élémentaire d'Électricité" has been issued by M. G. Masson, Paris.

TWO Annual Reports of the Board of Regents of the Smithsonian Institution have lately been issued. One is for 1887-88, the other for 1888-89—counting the year from July to July. In each case Dr. Langley, the Secretary, is able to give a very satisfactory account of work done—work of which any institution might be proud. After the Report, each volume includes, as usual, a number of valuable scientific papers. In the volume for 1888 there are summaries of progress in various branches of science, a series of miscellaneous papers, and several biographical memoirs. In the volume for 1889 the best papers are reprints of writings by British and German men of science.

THE Report of the U.S. National Museum, under the direction of the Smithsonian Institution, for the year ending June 30, 1888, has also been issued. It is presented in a massive volume, which takes in, besides the report of the assistant secretary in charge of the Museum, reports of the curators, papers describing and illustrating the collections, a bibliography of the institution during the year, and a list of accessions. The papers relating to the collections belong chiefly to the department of anthropology, and are of more than usual interest. They are carefully illustrated. In one of them Ensign A. P. Niblack, of the U.S. Navy, gives an elaborate account of the Coast Indians of Southern Alaska and Northern British Columbia. Mr. Walter Hough deals with the fire-making apparatus in the Museum, and Mr. P. L. Jouy with Corean mortuary pottery. Mr. Thomas Wilson contributes a study of prehistoric anthropology, and an essay on ancient Indian matting. He also presents the results of an inquiry as to the existence of man in North America during the Palæolithic period of the Stone Age.

AMONG the contents of the current number of the Journal of the Straits Branch of the Royal Asiatic Society, is a paper on the Sphingidæ, or hawk moths, of Singapore, by Lieut. H. L. Kelsall, R.A. Mr. H. N. Ridley contributes papers on the Burmanniaceæ of the Malay Peninsula; on the so-called tiger's milk, "Susu Rimau," of the Malays; and on the habits of the red ant commonly called the Caringa. These ants, although very ferocious, are remarkably intelligent; and Mr. Ridley gives a striking account of the way in which they make leaf nests. They have also great courage, and do not scruple to attack any insect, however large. Mr. Ridley once saw a fight between an army of Caringas, who tenanted the upper part of a fig-tree, and an advancing crowd of a much larger kind of black ants. The field of battle was a horizontal bough about 5 feet from the ground. The Caringas, standing alert on their tall legs, were arranged in masses awaiting the onset of the enemy. The black ants charged singly at any isolated Caringa, and tried to bite it in two with their powerful jaws. If the attack was successful, the Caringa was borne off to the nest at the foot of the tree. The red ant, on the other hand, attempted always to seize the black ant and hold on to it, so that its formic acid might take effect in the body of its enemy. If it got a hold on the black ant, the latter soon succumbed, and was borne off to the nest in the top of the tree. Eventually the Caringas retreated to their nest. The last to go had lost one leg and the abdomen in the fight; nevertheless, Mr. Ridley saw it alone charge and repulse three black ants one after the other, before it left the field.

THE Meteorological Council have just published an atlas of cyclone tracks in the South Indian Ocean, from information collected by Dr. Meldrum, of Mauritius, during a period of thirty-eight years, from 1848 to 1885 inclusive, with the exception of three years for which no reports of cyclones were received. The tracks are represented in two sets of charts, one set showing the distribution in each year, and the other grouping the storms according to months, excepting for August and September, in which months no cyclones were recorded. In dealing with these cyclones, Dr. Meldrum has divided them into progressive and stationary. It is admitted, however, that some of the latter may have moved, but that their progress may not have been detected from lack of observations. The relative frequency of both classes of storms for the whole period is very small, varying from 1 in 18 years for July, to 5 in 3 years during February and March; but, although the number of storms is so small, it does not appear likely that many have been missed, considering the untiring persistence with which Dr. Meldrum has pursued his investigations. The tracks of the several cyclones will afford much valuable information, and lead to a better knowledge of the latitude in which the recurvature of the storms in that ocean takes place. A cursory examination shows that the range of latitude over which the points of recurvature extend varies considerably, being from about 15° to 25° S.

THE Meteorological Department of the Government of India has published Part 3 of "Cyclone Memoirs," containing an elaborate discussion of the two most important storms in the Bay of Bengal during the year 1888—viz. those of September 13–20 and of October 27–31—and also of the cyclone in the Arabian Sea of November 6–9, 1888, accompanied by tables of observations during and before the storms and by 29 plates. The following is a very brief *résumé* of some of the more important conclusions arrived at by Mr. Eliot with regard to these storms, and with regard to cyclones generally in India: (1) that the difference of intensity in different quadrants is chiefly due to the fact that the humid winds which keep up the circulation enter mainly in one quadrant; (2) that the ascensional movement is usually most vigorous in the advancing quadrant, a little distance in front of the centre; (3) in consequence of this, and of rainfall taking place most vigorously in front of the cyclone, the isobars are oval in form, and the longest diameter coincides approximately with the direction of the path of the centre; this is not in the middle of the diameter, but at some distance behind; (4) that the cyclonic circulation cannot be resolved into the translation of a rotating disk or mass of air, and that its motion is somewhat analogous to the transmission of a wave; (5) that the direction of advance of these storms is mainly determined by rainfall distribution, and there is a marked tendency for storms to form in and run along the south-west monsoon trough of low pressure; (6) the lie of this trough depends upon the relative strengths and extension of the two currents.

AT the Iowa Experiment Station great efforts were made in the spring of last year to find out the best way of preventing the striped squirrels from taking corn. According to Mr. C. P. Gillette, some notes by whom are printed in *Insect Life* (U.S. Department of Agriculture), the corn was treated in the following ways:—Smoked with meat in an ordinary smoke-house until the kernels were black; smoked in a barrel with tobacco dust; smoked over night in strong decoctions of tobacco and of quassia chips; soaked in a dilute carbolic acid mixture, in strong alum water, in salt water, and in kerosene. The squirrels would take the corn treated in any of these ways, though the carbolic acid treatment and the smoking with tobacco made the corn distasteful, and when in the vicinity of other grain would be left till the last. The best remedy seems to be to harrow the ground immediately after planting to cover the planter tracks, and then to scatter corn about the border of the fields and in the vicinity of the squirrel holes as soon as the corn begins to come up.

WE have received the first number of the *London and Middlesex Note-book* (Elliot Stock). It is edited by Mr. W. P. W. Phillimore, and will be published quarterly. The periodical is likely to be very welcome to all students of the local history and antiquities of the cities of London and Westminster and the county of Middlesex.

DURING May, the lectures at the Royal Victoria Hall will be as follows:—5th, Dr. W. D. Halliburton, skin and bones; 12th, Mr. F. H. Blandford, silk and silkworms; 19th, Rev. J. Freeston, Galileo; 26th, Mr. W. North, the physiology of a dinner.

A PAPER upon the salts of the sub-oxide of silver is contributed by M. Güntz to the current number of the *Comptes rendus*. The question of the existence of these salts has been much discussed of late years, but very little trustworthy experimental evidence has been hitherto forthcoming. M. Güntz now claims to have prepared the sub-fluoride $Ag_2F$, sub-chloride $Ag_2Cl$, sub-iodide $Ag_2I$, and sub-sulphide $Ag_4S$. The sub-fluoride, $Ag_2F$, was described by M. Güntz about a year ago. It was obtained in the form of a crystalline powder, resembling bronze filings in appearance, by the electrolysis of a saturated solution of silver fluoride by means of a very strong electric current. These crystals of the sub-fluoride are unalterable in dry air, but are more or less rapidly decomposed by moisture. Water itself effects the decomposition at once with evolution of heat, one equivalent of silver being precipitated, and one molecule of ordinary silver fluoride passing into solution. This well-defined crystalline salt serves for the preparation of the others. When dry hydrochloric acid gas is led over the sub-fluoride the latter rapidly changes, becoming coloured a deep violet tint, and gradually becoming converted into the sub-chloride, $Ag_2Cl$. The vapours of the chlorides of carbon, silicon, and phosphorus act very much better than hydrochloric acid, fluorides of carbon, silicon, or phosphorus, and comparatively pure sub-chloride of silver being produced. Similarly, by leading a current of gaseous hydriodic acid over the sub-fluoride, the sub-iodide, $Ag_2I$, is obtained, the reaction in this case being accompanied by a large rise of temperature. The sub-sulphide, $Ag_4S$, is also obtained in like manner by passing sulphuretted hydrogen over the sub-fluoride. It is of considerable interest, moreover, that if the sulphuretted hydrogen is replaced by water vapour, and the tube containing the sub-fluoride is heated to 160°, the sub-oxide itself, $Ag_4O$, is obtained as the product of the reaction. As regards the initial preparation of the sub-fluoride, it is somewhat important to note that if a weak current is employed, and the temperature of the saturated solution of silver fluoride prevented from rising, only metallic silver is deposited at the negative pole. But if, on the contrary, a very strong current is employed, such as will cause considerable heating effect, the bronze-like crystals of the sub-fluoride make their appearance. M. Güntz announces that he now proposes to compare his sub-salts thus prepared with the products of the action of light upon the normal salts, a comparison which can scarcely fail to lead to results of interest from a photographic standpoint.

The additions to the Zoological Society's Gardens during the past week include a Sooty Mangabey (*Cercocebus fuliginosus* ♂) from West Africa, presented by Mr. F. J. Bennett; a Brown Howler (*Mycetes fuscus*) from Brazil, presented by Mr. E. Luxmore Marshall; an Azara's Agouti (*Dasyprocta azaræ*) from Brazil, presented by Lord Hebrand Russell, F.Z.S.; two Wild Swine (*Sus scrofa*) from Spain, presented by Mr. Alex. Williams; a Black-footed Penguin (*Spheniscus demersus*) from South Africa, a Rock-hopper Penguin (*Eudyptes chrysocome*) from the Falkland Islands, presented by Mr. H. B. Bingham; two Ring-necked Parrakeets (*Palæornis torquatus*) from India, presented by Miss E. Ogilvie; a Common Barn Owl (*Strix flammea*), British, presented by Mr. H. Bendelack Hewetson; a Common Fox (*Canis vulpes*), two White Pelicans (*Pelecanus onocrotalus*) from Southern Europe, deposited; an Egyptian Cat (*Felis chaus*) from North Africa, a Nankeen Night Heron (*Nycticorax caledonicus*) from Australia, a Great-billed Tern (*Phaethusa magnirostris*) from South America, purchased.

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## *OUR PRESENT KNOWLEDGE OF THE HIMALAYAS.*

THIS was the subject of an able paper read at Monday's meeting of the Royal Geographical Society, by Colonel H. C. B. Tanner (Indian Staff Corps), who for many years has been one of the officers of the Indian Survey, most of his time having been spent in various parts of the Himalayas from north-west to south-east. The paper was illustrated by a large number of admirable drawings by the author, which afforded an excellent idea of the physical and picturesque aspects of this great mountain system.

With regard to avalanches, Colonel Tanner stated that they play a great part in the conformation of the topography—a greater part, indeed, than is generally supposed, and this factor has not received the attention it deserves at the hands of geologists.

"I became acquainted," he said, "with four distinct kinds of avalanche, which, perhaps, are called by distinctive names by mountaineers, though I have been unable to ascertain them. The first, and the most common, is the precipitation of a mass of new snow from slopes which, from their steepness, are unable to retain more than a limited quantity of snow on them. They occur generally in winter and in early spring, and are the cause of the results just described. The second kind of avalanche is a descent of *old* snow, which is loosened by the heat of the sun. They may be heard throughout the summer and autumn, and are dangerous from the unexpected and irregular manner in which they slide off. The sportsman and traveller should guard against them by intelligently placing his camp in some sheltered spot out of their reach. This class is not usually of any great extent or weight, but such avalanches are of constant occurrence. The third kind can only be seen when the mountains are of peculiar formation or structure, and are really ice and not snow avalanches. They are of very constant occurrence in some localities, more particularly where small glaciers are situated high up on the crest of mountains, and are gradually pushed over the edge. In Lahaul, in the company of a friend, we watched the face of the well-known Gondla cliffs from the right bank of the Chandra River, and saw a number of these ice-falls, which came down every few minutes, filling the air with the noise of the loosened rocks and ice-blocks. The fourth kind of avalanche is one that I have only once seen, and have never known described. It is very curious, being the movements of billions of snowballs, which, in a stream a mile or half a mile long, I saw slowly wind down the upper part of an elevated valley in the Gilgit-Darel mountains. I was after ibex at the time of the occurrence, and was watching a herd of these animals, when I became aware of a low but distinct and unusual sound, produced by a great snake-like mass of snow winding down one of the valleys in my front. It occasionally stopped for a moment, and then proceeded again, and finally came to rest below me. I found this curious movement of snow was produced by countless numbers of snowballs, about the size of one's head, rolling over and over each other. The torrent-bed was full of them, an accumulation formed by numerous similar freaks of nature. I am quite unable to account for such an avalanche as the one now described. How does it originate, or by what process is the snow rolled up into these innumerable balls?"

Colonel Tanner made some interesting remarks on the subject of the line of perpetual snow. "Various authorities," he stated, "lay down such a line with great assurance, but for myself I find that circumstances of position, of climate, and of latitude, play so great a part in the position of this line that I am unable to define it even approximately. No sooner in one locality, or during one particular season, have I settled, to my own satisfaction, the line of perpetual snow, than I presently have been obliged completely to modify my views on the subject. On p. 154 of the 'English Cyclopædia,' vol. v., I read that snow lies 4000 feet higher in the northern than in the southern side of the Himalayas. On p. 281, vol. x., of the same work, it is stated that the snow-line on the northern slope is at 19,000 feet, which I should have been inclined to say is 1500 or 2000 feet too high. In Gilgit, during the end of summer, I found masses and fields of snow at 17,200 feet, and they extended down the northern slope certainly 2000 feet or even more below that altitude. In Kulu, which has many degrees of latitude less than that of Gilgit, avalanche snow lies in valleys above 8000 feet throughout the year after a good winter snowfall, but during the past spring, following a very mild winter, I found no snow at all at 8000 feet. There had been no avalanches, and even in June, at 14,000 feet, snow lay only in patches. I think that, in determining the snow-line with greater precision than has been done hitherto, scientific men should ascertain those altitudes on which perpetual snow lies on flat places in the position where it first falls, and should neglect the occurrence of a snow-field where it may have been protected from the sun's rays by its occurrence on the north face of a mountain. From memory I